

Robert M. Zucker

Education

- B.S., University of California, Los Angeles, CA; Physics, 1965.
- M.S., University of California, Los Angeles, CA; Biophysics & Nuclear Medicine, 1966.
- Ph.D., University of California, Los Angeles, CA; Biophysics, 1970.

Professional Experience

- 1985-1994: Senior Project Scientist, ManTech, Inc., Contractor to EPA.
- 1995-Present: Research Biologist, EPA.

Research Interests

- Application of biophysical technologies to study toxicological cellular changes.
- 3D Visualization of biological structures.
- Utilization of flow cytometry and confocal microscopy to study effects of toxic chemicals.
- Maximization of data quality using laser-based technologies.

Professional Activities

- Adjunct Faculty: Department of Pathology, East Carolina University, Greenville, NC.;
Department of Molecular Biological Sciences, College of Veterinary Medicine, North Carolina State University, Raleigh, NC.
- Councilor of International Society of Analytical Cytology. 2002-2006.
- Secretary of International Society of Analytical Cytology. 2004-2008.
- Member, Steering Committee of Research Triangle Cytometry Association. 1994-present.
- Guest Editor, Cytometry, Spectroscopy special issue. August, 2006.
- Cover Editor, Cytometry, 2006-present.
- Awarded, Best Biotechniques Cover for 2005
- Nikon Small World Distinguished Award, 2005.
- Member, Organizing Committee of Workshop on Calibration and Quantitation, National Institute of Standards and Technology. 2006.
- Member, Organizing Committee of Annual International Meeting, International Society of Analytical Cytology, Quebec City, Quebec. 2006

Invited Lectures and Seminars, International

- Confocal Imaging of Thick Tissue. German Flow Cytometry Society Meeting. Keynote lecture. Regensburg, Germany. Oct 2007.
- Confocal Imaging of Thick Tissue. 3rd Congress on Regenerative Medicine. International Society of Analytical Cytology Workshop on Regenerative Medicine. Leipzig, Germany Oct 2007.
- Tutorial on Confocal Microscopy. QA International Society of Analytical Cytology. Quebec City, Canada. May 2006.

- Lecture on Confocal Microscopy. QA for the Imaging Course at International Society of Analytical Cytology. Quebec City, Canada. May 2006.
- Workshop on Spectroscopy and Microscopy. International Society of Analytical Cytology. Quebec City Canada. May 2006.
- Workshop on Flow Cytometry International Society of Analytical Cytology. Quebec City, Canada. May 2006.
- Confocal Microscopy Studies of Embryos. University of Leipzig Heart Center. Leipzig, Germany. March 2005.
- Flow Cytometry Studies of Tributyltin. German Environmental Center. Leipzig, Germany. March 2005.
- Tutorial on Confocal Microscopy. International Society of Analytical Cytology. Montpellier, France. May 2004.
- Workshop on Confocal Microscopy. International Society of Analytical Cytology. Montpellier, France. May 2004.
- Confocal Microscopy System Performance: Foundations for Measurements, Quantitation and Deconvolution. Microcopy and Microanalysis 2002. Quebec, Canada. August 2002. With TE Stoker.

Invited Lectures and Seminars, US

- Confocal Microscopy of Thick tissue: Embryos, Kidneys and Ovaries. Department of Microbiology and Immunology. Confocal Workshop Lecture. Nov 2007.
- Flow Cytometry Quality Assurance: Chesapeake Cytometry Consortium. Rockville, Maryland. Oct 2007.
- Confocal Imaging of Mammalian Apoptosis in Thick Solid Tissues. Microscopy and Microanalysis 2007. Ft. Lauderdale, Florida. August 2007.
- Confocal Microscopy System Performance: Spectroscopy and Foundations for Quantitation. SPIE Photonics West. San Jose, California. Jan 2006.
- Confocal Microscopy System Performance: Foundations for Calibration Quantitation and Spectroscopy. SPIE Photonics West. San Jose California. Jan 2006.
- Confocal Microscopy System Performance: Spectroscopy and Foundations for Quantitation. Microscopy and Microanalysis. Honolulu, Hawaii. August 2005
- Confocal Microscopy System Performance: Confocal Microscopy System Performance: Foundations for Calibration Quantitation and Spectroscopy. Microscopy and Microanalysis. Honolulu, Hawaii. August 2005.
- Correlation of Flow Cytometry and Laser Scanning Confocal Microscopy Data: Lessons Learned from Each Technology and applied to the Other. RTCA . RTP, NC. Sept 2004.
- Confocal Microscopy and Flow Cytometry Correlations. Chesapeake Cytometry Consortium. Sept 2004
- Correlation of Flow Cytometry and Laser Scanning Confocal Microscopy Data: PMTs, CVs, Dichroics, Optics and Spectral Data. RTCA. RTP, NC. July 2003.
- Confocal Microscopy and Flow Cytometry Correlations. East Carolina University. Greenville, NC. June 2003.
- Correlation of Flow Cytometry and Laser Scanning Confocal Microscopy Data: PMTs, CVs, Dichroics, Optics and Spectral Data. MM2003. San Antonio, Texas. August 2003.
- LysoTracker Fluorescence to Detect Apoptosis in Embryos. Children's Hospital. Los Angeles, California. Dec 2002
- Tutorial on Confocal Microscopy. International Society of Analytical Cytology. San Diego, California. May 2002.
- Workshop on Confocal Microscopy. International Society of Analytical Cytology. San Diego, California. May 4 2002.

Selected Publications

Zucker RM, Rigby P, Clements I, Salmon W, Chua M. 2007. Reliability of confocal microscopy spectral imaging systems: Use of multispectral beads. *Cytometry A*. 71:174-89. [Abstract](#)

Johnson C, Sulik KK, Zucker RM, Hunter ES. 2007. Perturbation of retinoic acid (RA)-mediated limb development suggests a role for diminished RA signaling in the teratogenesis of ethanol. *Birth Defects Res A Clin Mol Teratol*. 79:631-641. [Abstract](#)

Zucker RM. 2006. Whole insect and mammalian embryo imaging with confocal microscopy: Morphology and apoptosis. *Cytometry A*. 69:1143-52. [Abstract](#)

Zucker RM, Jeffay SC. 2006. Confocal laser scanning microscopy of whole mouse ovaries: Excellent morphology, apoptosis detection, and spectroscopy. *Cytometry A*. 69:930-9. [Abstract](#)

Zucker RM. 2006. Quality assessment of confocal microscopy slide-based systems: Instability. *Cytometry A*. 69:677-90. [Abstract](#)

Zucker RM. 2006. Quality assessment of confocal microscopy slide based systems: Performance. *Cytometry A*. 69:659-76. [Abstract](#)

Zucker RM. 2006. Evaluation of confocal microscopy system performance. *Methods. Mol Biol*. 319:77-135. [Abstract](#)

Zucker RM. 2005. Evaluation of confocal microscopy system performance. In: *Cell imaging techniques: Methods and protocols*. Eds.: D.J. Taajets DJ, B.T. Mossman, Humana Press, Totowa, NJ.

Zucker RM, Lerner JM. 2005. Wavelength and alignment tests for confocal spectral imaging systems. *Microsc Res Tech*. 68:307-19. [Abstract](#)

Lerner JM, Zucker RM. 2004. Calibration and validation of confocal spectral imaging systems. *Cytometry A*. 62:8-34. [Abstract](#)

Kaydos E, Suarez JD, Roberts NL, Bobseine KL, Zucker RM, Laskey JW, Klinefelter GR. 2004. Haloacid induced alterations in fertility and the sperm biomarker SP22 in the rat are additive: Validation of an ELISA. *Toxicol Sci*. 81:430-42. [Abstract](#)

Degitz SJ, Rogers JM, Zucker RM, Hunter ES. 2004. Developmental toxicity of methanol: Pathogenesis in CD-1 and C57BL/6J mice exposed in whole embryo culture. *Birth Defects Res A Clin Mol Teratol*. 70:179-84. [Abstract](#)

Degitz SJ, Zucker RM, Kawanishi CY, Massenburg GS, Rogers JM. 2004. Pathogenesis of methanol-induced craniofacial defects in C57bBL/6J mice. *Birth Defects Res A Clin Mol Teratol*. 70:172-8. [Abstract](#)

Rogers JM, Brannen KC, Barbee BD, Zucker RM, Degitz SJ. 2004. Methanol exposure during gastrulation causes holoprosencephaly, facial dysgenesis, and cervical vertebral malformations in C57bBL6J mice. *Birth Defects Res B Dev Reprod Toxicol*. 71:80-8. [Abstract](#)

Leif RC, Stein JH, Zucker RM. 2004. A short history of the initial application of anti-5-BRDU to the detection and measurement of s phase. *Cytometry A*. 58:45-52. [Abstract](#)

Price OT, Lau C, Zucker RM. 2003. Quantitative fluorescence of 5-FU-treated fetal rat limbs using confocal laser scanning microscopy and lysotracker red. *Cytometry A*. 53:9-21. [Abstract](#)

Stoker TE, Jeffay SC, Zucker RM, Cooper RL, Perreault SD. 2003. Abnormal fertilization is responsible for reduced fecundity following thiram-induced ovulatory delay in the rat. *Biol Reprod*. 68:2142-9. [Abstract](#)

Zuelke KA, Jeffay SC, Zucker RM, Perreault SD. 2003. Glutathione (GSH) concentrations vary with the cell cycle in maturing hamster oocytes, zygotes, and pre-implantation stage embryos. *Mol Reprod Dev*. 64:106-12. [Abstract](#)

Klinefelter GR, Welch JE, Perreault SD, Moore HD, Zucker RM, Suarez JD, Roberts NL, Bobseine K, Jeffay S. 2002. Localization of the sperm protein SP-22 and inhibition of fertility *in vivo* and *in vitro*. *J Androl*. 23:48-63. [Abstract](#)

Watanabe M, Hitomi M, van der Wee K, Rothenberg F, Fisher SA, Zucker RM, Svoboda KK, Goldsmith EC, Heiskanen KM, Nieminen AL. 2002. The pros and cons of apoptosis assays for use in the study of cells, tissues, and organs. *Microsc Microanal*. 8:375-91. [Abstract](#)

Dunty WC, Zucker RM, Sulik KK. 2002. Hindbrain and cranial nerve dysmorphogenesis result from acute maternal ethanol administration. *Dev Neurosci*. 24:328-42. [Abstract](#)